importance of agricultural plants and their future possibilities. It will be found a valuable reference book upon many questions pertaining to economic and commercial aspects of tropical plants. Botanically, however, the book is often defective, as for example, in speaking of the growth of *Cannabis sativa* for its opium-like drug, the author says: "The male flowers are removed in November, for if the female flowers are fertilized there is no formation of the drug."—O. W. CALDWELL.

The geography of ferns

It is a praiseworthy thing for an investigator, who has devoted years to taxonomic exploration, to bring together in readable form the many things of geographic interest which he has observed. It is exactly this service which CHRIST, the well-known student of the ferns, has now performed.[3] The volume is divided into two parts, corresponding somewhat to the usual divisions of ecological and floristic geography. CHRIST regards the ferns as controlled by the same general distributional factors as the seed plants, the most noteworthy difference consisting in the pronounced tendency of ferns to be hygrophytic mesotherms. The great fern areas of the world are essentially coincident with the forest areas, very few species existing where the rainfall is less than 60 cm., and the greatest development occurring where the rainfall is over 200 cm.

The edaphic conditions under which ferns live are first noted, attention being called to the fact that most species are humus forms, and but slightly dependent on the mineral nature of the soil. Under the head of climatic conditions, a number of characteristic fern formations are described. The hygrophytic ferns are treated at considerable length, especial attention being devoted to the epiphytic forms. The features of the xerophytic ferns are well portrayed. In the floristic part of the work, consideration is given to a number of cosmopolites, and also to endemic forms and to species with disconnected areas. The body of the second part is made up of the treatment of the floristic regions of the world. Here, as elsewhere in the volume, the author makes it very clear that the ferns, in spite of their great age, are far from being a senescent group.

The volume is a mine of information, and will be of the highest value to all botanists. The excellent index makes it possible to find at once the known ecological and geographic facts concerning most living ferns.—HENRY C. COWLES.

An organic chemistry

The third English edition of HOLLEMAN'S *Organic chemistry* has just appeared,[4] edited by A. JAMIESON WALKER. The value of the book as a text

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[3] CHRIST, H., Die Geographie der Farne. 8vo. pp. 358, with frontispiece, *figs. 129* (mostly photographic reproductions), and *3 maps*. Jena: Gustav Fischer. 1910.

[4] HOLLEMAN, A. F., A textbook of organic chemistry. 8vo. pp. xx+599. *figs. 80*. New York: John Wiley & Sons. 1910.

is shown by a statement from the author's preface: "Besides the four editions of the original Dutch volume and three in English, seven editions of this book have been published in German, two in Russian, two in Italian, and one in Polish. A French edition and a Japanese edition are also in preparation.' A second quotation from the preface gives the aim of the book, which is well carried out, and it gives the text its great value as a general reference book' for students of physiology. "Most of the short textbooks of organic chemistry contain a great number of isolated facts; the number of compounds described in them is so considerable as to confuse the beginner. Moreover, the theoretical grounds on which this division of the science is based are often kept in the background; for example, the proofs given of the constitutional formulae frequently leave much to be desired. However useful these books may be for reference, they are often ill-suited for textbooks, as many students have learned from their own experience."

The chapters on sugars, amino acids, and proteins, of the greatest direct interest to physiologists, though brief, are certainly clear statements of the fundamental facts of the chemistry of these bodies. The chapter on proteins is in the body of the book just after amino acids, instead of in an appendix, as it appeared in the second edition. WALKER is credited with having introduced into the book the protein classification adopted by the Chemical Society of London, the English Physiological Society, the American Physiological Society, and the American Society of Biological Chemistry.—WILLIAM CROCKER.

NOTES FOR STUDENTS

Magazines for students of genetics.—The era of experimental study in heredity and evolution has called for new publications devoted to the results of research in this field. While all the biological journals occasionally contain articles which are of interest to the student of experimental evolution, several special magazines have been established which are quite indispensable to anyone who wishes to keep reasonably well informed regarding current progress in genetics and related subjects.

The first of these which deserves mention is *Biometrika*, which was established in London in 1901 under the editorship of Professor KARL PEARSON, for the publication of papers on mathematical methods of dealing with variation, heredity, selection, etc., and the results of their application. While not many of the articles published in *Biometrika* deal strictly with genetics, it was the first journal to voice the demands for more exact methods of investigating problems of evolution, and as the whole trend of modern biology is toward the greater exactness involved in mathematical treatment of biological data, *Biometrika* should continue to fill an increasingly important place, notwithstanding the unfortunate fact that there is a tendency of late to allow personal feeling to dominate both the policy of the magazine and the attitude